

## REMARKS

Applicants acknowledge the receipt of the Office Action dated 10 March 2005 in which the Examiner:

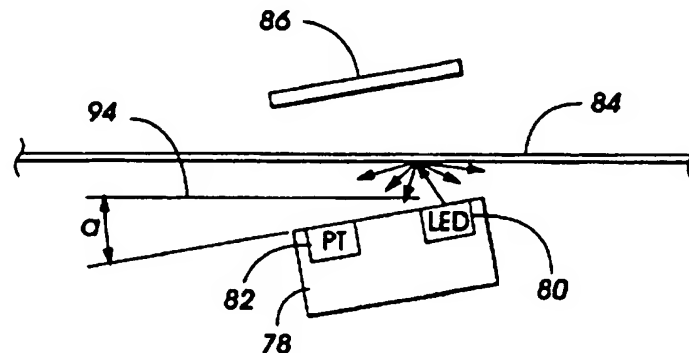
- 1) rejected claims 1 and 2 under 35 U.S.C. 102(b) as anticipated by *Ross et al.* (U.S. Pat. Pub. No. 2003/0043365),
- 2) rejected claims 9-10, 13-16, 18-19, 21-23, and 25 under 35 U.S.C. 102(b) as anticipated by *Borton et al.* (U.S. Pat. No. 5,751,443),
- 3) rejected claims 20, 26-27, 30, and 33-39 under 35 U.S.C. 102(b) as anticipated by *Minerd et al.* (U.S. Pat. No. 4,540,887),
- 4) rejected claims 41 and 43-44 under 35 U.S.C. 102(b) as anticipated by *Allen et al.* (U.S. Pat. No. 6,291,829), and
- 5) rejected claims 3-8, 11-12, 17, 20, 24, 28-29, 31-32, 40, and 42 under 35 U.S.C. 103(a) as obvious over one or more of: the above cited prior art references, *Kuchek* (U.S. Pat. No. 4,685,982), and *Barbera et al.* (U.S. Pat. No. 6,364,556).

In this Response, Applicants are: 1) canceling pending claims 1-8 and 26-33, 2) amending claims 34, 38, 39, and 41, and 3) adding new claims 45-48. No new matter is added. The claims are amended as shown above, with amendment status also indicated. All changes are shown by underlining the added text and double-bracketing and/or strikethrough of deleted text.

### **A. 35 U.S.C. 102(b) Rejection of Claim 9 Over U.S. Pat. No. 5,751,443 to *Borton et al.***

The Examiner has rejected independent claim 9 as anticipated by the *Borton* patent, suggesting that the shield area between source 80 and detector 82 of the *Borton* patent is an optical barrier. *Borton* does not teach or disclose the use of an optical barrier disposed between an optical source and an optical detector as recited in claim 9. The shield area between the source 80 and detector 82 of the *Borton* patent merely provides a spacing between the two

elements. This spacing requirement is also recited in Applicants' claim 9 as "an optical detector disposed in a spaced relationship with said optical source." The spacing between the source 80 and detector 82 as shown in Fig. 2 of the *Borton* patent does not, in and of itself, serve as an optical barrier between the two. To the contrary, Fig. 2 of the Borton patent, reproduced below, shows that the light rays reflected by media 84 do in fact reach the detector 82.



**FIG. 2**

In the absence of a barrier, the reflected rays, particularly those represented by the left-most arrows in Fig. 2, propagate unimpeded along the indicated path and reach the detector 82. Also, the space between the source 80 and detector 82 is not large enough to produce any significant attenuation of the light rays. Accordingly, since *Borton* does not teach or suggest the use of an optical barrier as Applicants have positively recited, claim 9 and claims depending therefrom are allowable over *Borton*.

**B. 35 U.S.C. 102(b) Rejection of Claim 34 over U.S. Pat. No. 4,540,887 to *Minerd et al.***

The Examiner has rejected independent claim 34 as anticipated by the *Minerd* patent. Without conceding the appropriateness of this rejection, Applicants have amended claim 34 to more clearly distinguish Applicant's claimed invention over the cited prior art. Applicants have added limitations to more clearly define the optical path followed by the optical energy directed from the optical source to the optical detector. Specifically, Applicants have added the

limitations “directing said optical energy through at least two distinct locations along said media path” and “reflecting said optical energy off at least two reflective surfaces.” None of the references cited by the Examiner, including the *Minerd* patent, disclose the use of multiple reflective surfaces between the optical source and the optical detector. Therefore, amended claim 34 is allowable over the prior art of record, as are all claims depending therefrom.

Dependent claims 38 and 39 have been amended to more clearly delineate the orientation and path followed by the optical energy emitted by the optical source. For instance, claim 38 recites that the optical energy is directed and received at substantially equal, but opposite angles with respect to a direction normal to said media path. Claim 39 recites that the optical energy passes through the media path a first time, then to the two reflective surfaces, and then through the media path a second time. The limitations recited in these dependent claims are also not taught or suggested by the prior art of record.

**C. 35 U.S.C. 102(b) Rejection of Claim 41 over U.S. Pat. No. 6,291,829 to Allen et al.**

The Examiner has rejected independent claim 41 as anticipated by the *Allen* patent. Without conceding the appropriateness of this rejection, Applicants have amended claim 41 to more clearly distinguish Applicant’s claimed invention over the cited prior art. Applicants have added at least two reflective surfaces to the claimed media sensor. These two surfaces are “disposed to reflect light emitted by said optical source toward said optical detector.” In addition, claim 41 has been amended to recite that the path of light from the source to detector crosses the media path at least twice. None of the references cited by the Examiner, including the *Allen* patent, disclose the use of at least two reflective surfaces between the optical source and the optical detector in combination with two optical crossings of the media path. Therefore, Applicants believe that amended claim 41 is allowable over the prior art of record, as are all claims depending therefrom.

**D. New Claims 45-48**

New claims 45-48 recite distinguishable limitations related to the configuration of Applicants claimed media sensor. For instance, claim 45 recites that the optical source and optical detector are disposed on a first side of the media path while the at least two reflective surfaces are disposed on a second side of said media path. Claim 46 recites that the reflective surfaces form a corner cube retro reflector. Claim 47 recites that the reflective surfaces are disposed at substantially equal, but opposite angles relative to a direction normal to said media path. Lastly, claim 48 recites that the optical source and optical detector are disposed at substantially equal, but opposite angles relative to a direction normal to said media path. The limitations recited in these new dependent claims are not taught or suggested by the prior art of record and are allowable over the art of record.


**E. Conclusion**

All pending claims are allowable over the art of record. Prompt allowance of all pending claims is respectfully requested. If the Examiner feels a telephone conversation is necessary for discussing the issues, (s)he is invited to call the undersigned.

Respectfully submitted,

**COATS & BENNETT, P.L.L.C.**

By:

  
Edward H. Green, III  
Reg. No. 42,604

P.O. Box 5  
Raleigh, NC 27602  
Telephone: (919) 854-1844

**CERTIFICATE OF MAILING**

I HEREBY CERTIFY THAT THIS DOCUMENT IS BEING DEPOSITED WITH THE UNITED STATE POSTAL SERVICE, ON THE DATE INDICATED BELOW, AS FIRST CLASS MAIL, POSTAGE PREPAID, IN AN ENVELOPE ADDRESSED TO: **Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Signature: \_\_\_\_\_

Name: Amy J. Martin

Date: \_\_\_\_\_

6/10/05